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Sea turtle conservation management plan

Phra Thong island, Thailand

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ABSTRACT

At Phra Thong (PT) island and its surroundings surveys have been carried out applying different methodologies by the Phuket Marine Biological Center (PMBC) since 1985. In 1996 the Sea Turtle Project (STP) was started on the island aiming to collect scientific data on the nesting population, to carry out an education program in the local schools and to conduct conservation awareness activities among tourists visiting the island.

Due to its high concentration value as an important sea turtle nesting and foraging area, a comprehensive conservation management plan is herein presented to address the conservation needs of PT island. Baseline data collected concerning sea turtles is used to design the Sea Turtle Conservation Management Plan (STCMP). The document represents the first step toward a correct management of these reptiles which should be integrated in a wider conservation approach such as an Integrated Coastal Zone Management.

KEYWORDS: Sea Turtles, Thailand, Conservation, Management Plan.

INTRODUCTION

Marine turtle populations in Asia have been depleted through long-term harvesting of eggs and adults, and as by-catch in the ever-growing trawl fisheries (Shanker and Pilcher, 2003). It is thought that, the decline in abundance of sea turtles and other mega vertebrates initiated the collapse of marine ecosystems in which they lived (Jackson *et al.*, 2001). Today, the degradation of marine ecosystems has accelerated as a result of continued over-fishing, pollution, habitat destruction and climate change. For example, in the Asia and Pacific region the development of coastal cities has strongly impacted marine and coastal environments, in particular their health by modifying and destroying them (Jiang *et al.*, 2001).

Since turtles are indicators of the health of various and diverse marine ecosystems, their losses reflect a void in mankind's ability to sustain the present health of the ocean (Shanker and Pilcher, 2003). Conserving adult female turtles and their nesting and feeding habitats merits top priority in any conservation strategy (Demetropoulos, 2000). In the wild, a mature female will lay over many years, probably producing about 300-500 eggs per nesting season, depending on the species. The total number of eggs varies for many reasons. This means that in her lifetime she could lay many thousands of eggs. Most eggs and hatchlings will normally perish on the beaches, as a result of predation and inundation by the sea. The number of hatchlings that reach the sea will be small, often estimated at a small percentage of eggs laid. Many young turtles will survive to a certain age but will perish before sexual maturity or soon afterwards. In addition to natural

causes of mortality, we should bear in mind human activities that have negative effects on them. For these reasons, it would be obvious that mature females turtles (and no doubt males too) merit top priority in any conservation programme, both on and near their nesting beaches and on their feeding grounds and migrations.

Strict enforcement of protective legislation and other conservation programs in the last 30 years in Asia suggest, that in few cases, long-term conservation efforts can help maintain and restore populations (Shanker and Pilcher, 2003). At Phra Thong island and its surroundings, although applying different methodologies, surveys and conservation activities were carried out by the PMBC since 1985 and in 1996 the STP was started at PT island aiming to collect scientific data on the nesting population, to carry out an education program in the local schools and to conduct conservation awareness activities among tourists visiting the island.

Preparation of STCMP

Due to its high conservation value as an important sea turtle nesting and foraging area, a comprehensive conservation management plan is herein presented to address the conservation need of PT island. Baseline data collected concerning sea turtles is used to design a STCMP which should be integrated in a wider conservation approach such as an Integrated Coastal Zone Management.

The concept of integrated management is crucial to marine turtle conservation in several ways: 1.

marine turtle management should be incorporated into coastal management regimes to ensure that habitat quality and ecosystem functions are maintained; 2. marine turtle management should be included at local, regional and global levels so that those people directly affected by management, as well as those who have influence over regional and global activities are involved, 3. management of any marine turtle species or population should be integrated across its entire geographic range so that activities in one part of the range do not undermine conservation management in other areas of its range (IUCN/SSC MTSG, 1995).

The STCMP should be useful in: ensuring all the information has been collated, assessing priorities, clarifying thinking and in ensuring all parties are informed and involved in the decision-making process. It is intended that scientists, resource managers, agency officials, funding organizations and political leaders will utilize the STCMP when deciding where to allocate available resources.

This paper represents a synthesis of the original document. Copies of the document, in English and Thai, can be obtained from the author. The STCMP of PT island provides an assessment of the conservation status of the species and their habitats, synthesises marine turtle information collected and recommends measures to address threats that the information has highlighted.

Target Area

Phra Thong (PT) island is one of three relatively large islands located just off the coast of Phang Nga province along the South West coast of Thailand (Fig.1).

Target Species

Olive ridley turtle (*Lepidochelys olivacea*), green turtle (*Chelonia mydas*), leatherback turtle (*Dermochelys coriacea*), Hawksbill turtle (*Eretmochelys imbricata*).

STCMP Objectives

- To protect, conserve and where possible to enhance the populations of marine turtles along the Andaman Sea coast of Thailand
- To provide appropriate protection, conservation and management of the marine turtles habitats including nesting, feeding and migration routes
- To improve the scientific knowledge by research and monitoring
- To involve the local community in the implementation of new conservation strategies

STCMP Table of Contents of the original document

The document comprises an introduction and objectives section followed by a main part that focuses on description of species, background information, conservation accomplishments, current protective regulations and assessment of population status.

A detailed section is dedicated to threats and recommendation description, likewise a general recommendation. Threats are herein summarized in Table 1. Each threat, in the original document, is singularly described (# General description) and specific details on PT island sea turtle population (# PT island) are given.

Recommendations for each of them are suggested, likewise general recommendations for a successful management of the population.

Nesting Environment (beach)	
Natural	Human
<ul style="list-style-type: none"> - Inundation - Beach erosion 	<ul style="list-style-type: none"> - Tourist development - Increased human presence - Artificial lights - Beach vehicular driving - Beach erosion - Garbage on the beach - Recreational beach equipment - Road construction - Egg poaching
Marine Environment	
Natural	Human
<ul style="list-style-type: none"> - Predation 	<ul style="list-style-type: none"> - Fisheries - Underwater explosion - Pollution - Sea grass bed and reef degradation - Marina and dock development - Directed takes of turtles

Table 1. Threats reported and observed at PT island. Their detailed description is found in the original document.

General recommendations are divided in sections:

1. Scientific research:
 - Continue scientific research
 - collect biological information on nesting turtle population
 - monitor trends in nesting activity by means of standardized methods
 - determine effects of factors such as tidal inundation, egg poaching and vehicle driving on hatching success
 - continue to determine hatching sex ratio
 - conduct scientific research on beach characteristics
 - identify genetic stock type for the area
 - determine distribution, abundance and status in the marine environment
 - determine adult migration routes and interesting movements
 - identify current or potential threats to adults and juveniles on foraging grounds
 - study the impact of diseases on turtles
 - create a stranding network
2. Involvement of local people:
 - provide training to local people
 - continue conservation education in the schools
 - create working groups
3. Ensure proper care in captivity:
 - regulate and limit captive turtles
 - develop standards for care and maintenance of sea turtles, including diet, water quality, tank size, and treatment of injuries and diseases, etc. through compilation of guidelines
 - establish a catalogue of all captive turtles in Thailand to enhance research and education
 - establish limits of animals taken from wild population
 - designate rehabilitation facilities
 - set up a Rescue Center
 - train local vets
 - organize training for local people
4. Edit training/awareness materials:

In order to implement the above mentioned recommendations, it would be useful to produce training/awareness materials. The following guidelines are suggested:

 - hatchery and how to relocate turtle eggs
 - captivity care
 - first-aid and turtle rescuing
 - standard monitoring methods
 - fishermen education
5. International cooperation:
 - support existing international agreements and conventions to ensure that turtles in all life stages are protected in foreign waters
 - develop new international agreement

- continue collaboration with foreign experts and NGOs

STCMP implementation

The STCMP is a primary document, a kind of guiding document which is meant to be circulated among people who are involved into the conservation of Phra Thong island.

The first step toward the implementation of the document is to present it to institutions, NGOs, etc working in the area. A budget should be also created in order to implement the recommendations in the document in the next three years. A meeting between stakeholders should be organized in order to set up a steering committee. An annual plan should be designed and copies of the document should be distributed in the area.

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